

Claims:

1. A hot runner injection molding apparatus comprising:
 - (a) a melt conveying system, said system having:
 - (i) a melt distribution manifold having at least one melt
5 passage for transferring melt from a source of
pressurized melt, and,
 - (ii) at least one injection nozzle having a melt bore
therethrough, said melt bore in fluid communication with
said at least one manifold melt passage;
 - 10 (b) at least one mold cavity adjacent said at least one nozzle, said
mold cavity in fluid communication with said melt bore of said at least one
nozzle; and
 - (c) a manifold heater, wherein said manifold heater includes a film
heating element, wherein said film heating element is connected to an exterior
15 surface of said melt distribution manifold to provide heat to melt in said at
least one melt passage.
2. An injection molding apparatus as claimed in claim 1, wherein said
manifold heater includes a dielectric layer between said film heating element
20 and said melt distribution manifold.
3. An injection molding apparatus as claimed in claim 1, wherein said film
heating element has an inner face that faces towards said melt distribution
manifold, and wherein said film heating element has an outer face, and said
25 manifold heater includes an insulation layer that is positioned on said outer
face.
4. An injection molding apparatus as claimed in claim 1, wherein said
manifold heater includes a wire heater element.

5. An injection molding apparatus as claimed in claim 1, wherein said manifold heater includes a thermocouple element connected to said film heating element.
- 5 6. An injection molding apparatus as claimed in claim 1, wherein said film heating element includes a wire heater element and a thermocouple element connected to said film heating element.
7. A combination of a melt distribution manifold for an injection molding
10 apparatus and a manifold heater, said melt distribution manifold having at least one melt passage for transferring melt from a source of pressurized melt to at least one injection nozzle, wherein said manifold heater includes a film heating element, wherein said film heating element is connected to an exterior surface of said melt distribution manifold to provide heat to melt in said at
15 least one melt passage.
8. A combination as claimed in claim 7, wherein said manifold heater includes a dielectric layer that is adapted to be positioned between said film heating element and said melt distribution manifold.
- 20 9. A combination as claimed in claim 7, wherein said film heating element has an inner face that is adapted to face towards said melt distribution manifold, and wherein said film heating element has an outer face, and said manifold heater includes an insulation layer that is positioned on said outer
25 face.
10. A combination as claimed in claim 7, wherein said manifold heater includes a wire heater element.
- 30 11. A combination as claimed in claim 7, wherein said manifold heater includes a thermocouple element connected to said film heating element.

12. A combination as claimed in claim 7, wherein said film heating element includes a wire heater element and a thermocouple element connected to said film heating element.